Argentina: Fernandez v.

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November 3, 1989

Dr. Hector A. Mairal
Klein & Mairal
Lavalle 1171
1354 Buenos Aires
Argentina

Re: Argentine Smoking and Health Litigation

Dear Hector:

I am writing to respond to several questions you raised in our several telephone conversations. I apologize for taking so long to respond.

Fernandez v. Nobleza-Piccardo

1. Evaluation of ETS Constituents in Indoor Air

There are at least two ways to interpret data on ETS constituents in indoor air. The first method involves a comparison of the ETS constituents measured in indoor air with their "equivalent" in the mainstream smoke of a cigarette. For example, there have been a number of recent studies on nicotine in indoor air which suggest that a nonsmoker typically is exposed to the nicotine equivalent of 1/100th to 1/1000th of a single cigarette per hour (in offices, restaurants and other public places). Alternatively, given the data, it is suggested that an office worker would have to work for 100-1000 straight hours in order to be exposed to the nicotine equivalent of a single cigarette; a diner would have to eat for 400 straight hours, and an airline passenger would have to take eight straight roundtrips between the U.S. and Asia in order to be exposed to the nicotine equivalent of a single cigarette.

The nicotine equivalent is derived by taking the sales-weighted average for nicotine per cigarette (e.g. 3 milligrams) and dividing by the amount of nicotine measured in the air (e.g. 3 micrograms). (3 milligrams = 3000 micrograms, divided by 3 micrograms = 1/1000th of a cigarette). There are those who argue that use of cigarette equivalents is meaningless because it says nothing about other constituents, and because mainstream smoke is different from that to which the nonsmoker is exposed, but the comparison may be effective in demonstrating the minimal nature

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of average ETS exposures. Of course, there always will be those who argue that even 1/1000th of a cigarette is too much exposure.

A second way to interpret ETS constituent data is illustrated by the two enclosed articles. This method consists of comparing air samples of various ETS constituents with Threshold Limit Values (TLV's), which are established as limits for workplace exposures. There is no workplace standard for ETS per se. In one example, Aviado (p. 542) compares the sidestream smoke emission of a constituent, e.g. formaldehyde, with its TLV. The comparison results in a cigarette equivalence per 100 cubic meters. Notice that Aviado's comparison uses sidestream smoke emissions, which are orders of magnitude higher than typical ETS samples of the constituent. Malmfors et al., in the second article (pp. 623-624), compare ETS constituent samples with both TLVs and with other standards for general indoor air (where applicable). They report that the nicotine and carbon monoxide concentrations found in their study were one-tenth the levels established as limits for the working environment or indoor air. These results do not have the dramatic flair of the cigarette "equivalent", but they may be more pertinent to the workplace issue. TLVs, as set by The American Conference of Governmental Industrial Hygienists (ACGIH), have a built in "safety" factor for health effects. The amount listed as a TLV is usually many times lower than the level at which adverse health effects are believed to occur.

In summary, these are just two ways in which data on ambient ETS concentrations may be interpreted. Both methods have been successful in conveying the basic message that average nonsmoker exposures to ETS are minimal.

2. Correlation of Carbon Monoxide with Other ETS Constituents

You requested information on the issue of correlating CO readings with other indoor air constituents in the workplace. As you point out, CO is nonspecific for tobacco smoke, in that one cannot assume or readily determine how much CO in a given enclosure is generated by ETS. There are two additional scientific problems with such correlations: (1) ETS is partitioned into two phases, a gas and a particulate phase. A reading for any constituent within one phase says nothing about a constituent in another since, to date, scientists have not identified a "bridge chemical" which would permit correlations between the two phases. (2) The second problem is that ETS is not a static mixture but a very dynamic composite which undergoes chemical change during decay. We know very little about this decay process. Thus, a reading of a particular constituent 30 seconds after commencing smoking may be

a marker for other constituents at that time, but a reading 2 minutes later may not be suitable as a marker.

However, it is possible to generalize about results of ambient ETS readings, if points (1) and (2) above are acknowledged. For example, Proctor et al. (attached, p. 170) provide summary data on a number of ETS constituents in the office setting. Notice, for example, a mean CO reading of 1.4 ppm correlates with 13 micrograms benzene, 103 micrograms of respirable particulates, etc. Interestingly, levels of benzene were lower in smokers' offices than in nonsmokers' offices. Sterling et al. (p. 404) examine indoor constituent data gathered through their Building Performance Database. Median levels of CO (2.54 ppm) were associated with median levels of 0.02 ppm formaldehyde, nondetectable levels of nitrogen oxides, etc. Kirk et al. (as did Proctor et al.) reported little difference in CO readings between smoking and nonsmoking areas, but they noted higher levels of nicotine and particulates in smoking compared to nonsmoking areas. Their study underscores the need for caution when attempting to infer levels of ETS constituents based on CO readings alone.

3. Health Effects of Exposure to Nicotine and Carbon Monoxide

I have enclosed three articles with respect to the health effects of exposure to nicotine and carbon monoxide. Two of the articles conclude that the levels of nicotine and CO to which the nonsmoker is exposed are unlikely to have any physiological effects. The only exception is that of Ohkubo who reports peripheral blood vessel constriction after acute doses of 14 micrograms of nicotine. (An exposure average of 4 micrograms of nicotine would translate to an even lower dose of nicotine, and it is doubtful if such a low dose would be related to blood vessel constriction).

4. Comparison of ETS Levels in the Factory with Other Locations

We have discussed the potential pitfalls of comparing ETS levels in the factory with other locations such as trains, bars, etc. We see no difficulty with making that sort of comparison so long as there is no suggestion that the levels in other locations pose any threat to health.

Chauque and Alarcon v. Heirs of Figueroa Compero

I have enclosed background information on Furadan (carbofuran) and methyl bromide. I have included information on sample levels and toxicological profiles for Furadan and regulatory registration data, fact sheets, industrial hygiene summaries,

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NIOSH/OSHA health guidelines and toxicological profiles for methyl bromide. In addition, I have enclosed articles describing cases of methyl bromide poisoning which give clinical details for both surviving individuals and those which proved fatal.

Methyl bromide is a restricted use pesticide in the US because of its high acute toxicity and for potential accidental exposure to applicators and workers.

You may want to suggest to the attorneys handling the case that they contact a good industrial hygienist to discuss the occupational aspects of the case, i.e. if methyl bromide contained chloropicrin, then its odor would act as a warning to exposure, etc.

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I hope the foregoing materials are useful and have responded, at least to some extent, to your questions. After you have had an opportunity to review them, please let us know if you need additional materials at this time. Of course, we would also like to periodically be advised of the status of the cases.

Sincerely,

James T. Newsom

James T. Newsom

JTN/tlb
Enclosures

cc: Stephen C. Parrish (w/encl.)
Donald K. Hoel, London Office (w/encl.)

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